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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/648,570	08/26/2003	Samuel D. Naffziger	200208858-1	4101

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EXAMINER	
SHINGLETON, MICHAEL B	
ART UNIT	**PAPER NUMBER**
2817	

DATE MAILED: 05/05/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/648,570	NAFFZIGER ET AL.	
	Examiner	Art Unit	
	Michael B. Shingleton	2817	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *28 February 2005*.

2a)☒ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-31* is/are pending in the application.

4a) Of the above claim(s) *8,13,14,19 and 31* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-7,12,15-17 and 20-26* is/are rejected.

7)☒ Claim(s) *9-11,18 and 27-30* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *8-26-2003*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

Applicant's election without traverse of species IV (Figure 4) in the reply filed on 2-28-2005 is acknowledged. The embodiment of Figure 2 will be examined along with that of Figure 4. Claims 8, 13, 14, 19 and 31 are withdrawn to the non-elected invention.

Drawings

The drawing Figure 4 is objected to under 37 CFR 1.83(a) because it fails to show a frequency generator that has a frequency that varies based on an operating voltage, i.e. supply voltage. (Note that applicant believes that claims like claim 1 are directed toward the invention of Figure 4.) The specification describes element 156 as producing a change in frequency that is based on the UP/DN control signal and that "reductions in frequency can occur when the supply voltage V_{SUPPLY} is too low" (See page 12, around line 9). Thus the specification appears to imply that the frequency synthesizer 156 has its output frequency dependent upon the supply voltage but the structure that allows for this critical feature that is essential for the proper understanding of the disclosed invention and is claimed in claims like claim 1 does appear in Figure 4. Any structural detail that is essential for a proper understanding of the disclosed invention should be shown in the drawing. MPEP § 608.02(d). Figure 4 clearly shows the frequency output of the element 156 as dependent upon the UP/DN signal but shows no nexus or structural connection between the V_{SUPPLY} and element 156 that clearly shows the dependency of the frequency output of element 156 on the V_{SUPPLY} as implied by the specification and claimed. Since the critical feature is not shown in Figure 4 one would be lead to believe that element 156 is just dependent upon the UP/DN signal and that there is no relationship between the voltage "V_{SUPPLY} " and the element 156 as such a critical and claimed feature is not shown. Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Objections

Claims 2, 5 and 28 are objected to because of the following informalities: In order for there to be proper antecedent basis for the claim term "the first...signals" of lines 3 and 4 thereof it appears that applicant meant for "the first signal" of line 2 of this claim to be "a first signal". Claim 5 also lacks proper antecedent basis but for the term "the reference voltage". It is clearly apparent that applicant actually meant "a reference voltage" instead. Claim 28 also lacks proper antecedent basis but for the term "the second reference signal". It is clearly apparent that applicant actually meant for claim 28 to be dependent on claim 27 instead of claim 23 so as to provide for proper antecedent basis for "the second reference signal". Accordingly, for examining purposes the dependency of claim 28 is taken to be claim 27. Appropriate correction is required.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-7, 12, 15-17, and 20-25 are rejected under 35 U.S.C. 102(b) as being clearly anticipated by Holler, Jr. et al. 5,416,446 (Holler).

Figures 1 and 2 and the relevant text of Holler discloses a system having a frequency generator (102, Figure 2) that provides a "clock" signal for use by element 103 and 104. The signal produced by element 102 qualifies as a clock signal as it provides a timing signal that is applied to element 104. The examiner notes that no specific definition is set forth by applicant in the disclosure. Also the examiner must give the broadest reasonable interpretation to the claim terms (See MPEP 2111). This frequency generator 102 has a frequency that is based on an operating voltage like V_{DDR} in Figure 2. The voltage V_{DDR} changes with changes in the current supplied via elements like 204 and because of changes in V_{DD}. A change in current through elements like 204 will cause the V_{DDR} voltage to change which in turn causes a change in the frequency (See column 2, around line 60). Note that in order for there to be more current through the delay elements, the voltage must increase in value. The controller is composed of elements like 108, 110, 111 and 101. This controller provides a control signal to the transistors in elements like 204 (See Figures 1 and 2). This control signal is based on adjustments in frequency controlled in part by the sensing of the frequency via elements like 108 (See column 3, around line 60). A throttle event according to applicant can include a change in frequency do to a change in the supply voltage. As noted above if the supply voltage like V_{DD} is changed then the supply voltage V_{DDR} changes then a throttle event occurred. Claims like claim 16 recites a means for providing an indication of voltage induced throttle events for an integrated circuit. First the circuit of Holler is an integrated circuit (See column 1, around line 64). When a change in the supply voltage V_{DDR} occurs then the frequency output as noted above will change and this gives an indication of a voltage induced throttle event like that of applicant's invention. Because of the change in the frequency, this is sensed as noted above and is changed accordingly. Thus this control circuit forms the means for controlling the supply voltage V_{DDR} of the integrated circuit based in the indication of throttle events i.e. the change in frequency. This structure indicated above also provides for the method step of determining whether adjustments to an operating frequency of an integrated circuit are within expected operating parameters (Note the sensing of the frequency as noted above.). These adjustments are clearly made continuously and this are performed over a "cycle time" that

includes a plurality of cycles at the operating frequency. As noted above the supply voltage V_{DDR} is adjusted based on the determination of the frequency. Note with respect to claims like claim 2 the fixed frequency is the second signal from element 105 (Element 105 would be the second frequency generator of claims like claim 12.) and the signal at the output of element 102 would be the first signal. Because the adjustments are made continuously the control signal is based on a number of cycles of the first signal relative to the number of cycles of the second signal over a cycle time. The cycle time can be any amount of time that includes at least two cycles of the first and second signals. Note that a comparator 110 is operative to ascertain the measurement of frequency that provides an indication of throttle events associated with the frequency generator implementing changes to the frequency of the clock signal (Output of element 102). The controller as noted above then clearly provides the control signal based on the indication of the throttle events. These indications of throttle events are compared to a "threshold value" that is a result of the output of register 109 (See the paragraph bridging columns 3 and 4). As noted above the control signal provides for control of the supply voltage V_{DDR} (the reference signal of claims like claim 5.). The control signal is clearly based on the comparator signal. The threshold is clearly programmable because of the signal "REFERENCE". The paragraph bridging columns 3 and 4 of Holler recites that the threshold value can be indicative of which way the frequency needs to be changed, i.e. "faster or slower". Thus the selection of the threshold value in Holler is a selection of one of the first and second operating categories, i.e. whether the operating voltage is too low or too high. The second signal from the second frequency generator for a set "sampling interval" will determine the maximum frequency for the clock signal as this number of cycles of the second signal over a set sampling interval determines the maximum amount the counter can be changed over the set sampling interval. Note that the "known interval" i.e. the sampling interval is set by the crystal 106 of the fixed frequency oscillator. This determines the number of cycles for the clock signal relative to a number of cycles of the second signal having a fixed frequency which is a measurement of frequency, which as indicated above, is an indication of "throttle events" associated with changes in a frequency of the clock signal. The controller composed of elements like 108, 110, 111 and 101 implements the control of the supply voltage V_{DDR} on a cycle time i.e. sampling interval. Since this controller is part of a feedback loop as is clearly illustrated by Figure 1 it is considered a "power control loop". The cycle time (second cycle time of claims like claim 25) is clearly greater than a cycle time (first cycle time of claims like claim 25), i.e. period of one cycle of the clock signal for the sampling interval (Again see the paragraph bridging columns 3 and 4 and in particular note that the counter 108 counts the number of "cycles" of the ring oscillator.)

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claim 26 is rejected under 35 U.S.C. 103(a) as being unpatentable over Holler, Jr. et al. 5,416,446 (Holler).

All the reasoning applied in the above 35 USC 102 rejection involving Holler and the following. Holler is silent on the exact length of the sampling period or "second cycle time". The sampling period clearly contains "cycles" of the first cycle time but is silent on exactly how many cycles. However, the number of cycles is a result effective variable as this determines the maximum and minimum frequencies. As this involves but routine skill in the art, the selection of "about one hundred times greater than the first cycle time" would have been obvious to one of ordinary skill in the art at the time the invention was made.

Allowable Subject Matter

Claims 9-11, 18 and 27-30 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Takeyabu et al. 6,392,494 shows a phase detector that employs two counters that indicate higher or lower.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Michael B. Shingleton whose telephone number is (571)272-1770.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Robert Pascal, can be reached on (571)272-1769. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

MBS
April 29, 2005